Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Sclerotinia* Fruit and Crown Rot Caused by *Sclerotinia sclerotiorum* on Short-Day Strawberry in Maryland

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With over 1,000 producers in the Mid-Atlantic region, short-day strawberry (*Fragaria × ananassa* Duch.) represents an economically important industry. In spring of 2016, a white rot was observed on strawberry stem, crown, and fruit tissue at two Maryland farms. Light to dark brown necrotic lesions, white mycelium, and medium to large black sclerotia were present on petioles and fruit. These symptoms were most consistent with *Sclerotinia* fruit rot and crown rot caused by *Sclerotinia sclerotiorum* (Lib.) de Bary (Maas 1998), not previously described in the region (Farr and Rossman 2019). Lesion margins were excised, surface disinfested (70% EtOH for 30 s and 0.1% NaClO for 1 min), and placed onto potato dextrose agar (PDA) amended with 0.03% tetracycline. Single hyphal tip cultures were obtained, which formed fluffy white to tan mycelium, no asexual conidia, and numerous pigmented sclerotia resembling *S. sclerotiorum* (Bolton et al. 2006). DNA was extracted from five isolates and ITS region was amplified by PCR using primers ITS1/ITS4; all five ITS sequences (525 bp) had 99 to 100% similarity with *S. sclerotiorum* (MK074848) in GenBank (525 matching/525 to 526 total bp). Sequences of SL1380 and SL1382 were submitted to NCBI under accession numbers MK429976 and MK429977, respectively. Koch's postulates trials were conducted for these two isolates to evaluate fruit and stem petiole rot abilities. Surface disinfested fruit was inoculated by placing a 5 mm plug from 5-day-old cultures, with mock-inoculated (PDA plug only) and noninoculated negative controls. Fruit were incubated (~98% RH, 22°C, 10:14 h light/dark) and arranged in a complete block design with three blocks and five fruit/treatment/block; the study was conducted twice. White hyphae and ~5 to 20 mm sclerotia formed on 41 to 53% of

fruit inoculated with both isolates, necrotizing fruit within 6 days post inoculation (DPI); *Sclerotinia* fruit rot did not develop in controls. Pathogenicity on petioles was examined in a replicated study on 3-month-old cv. Flavorfest, wherein each cut petiole was placed in a pipette tip containing colonized agar as described in Peltier and Grau (2008); negative controls were mock-inoculated with sterile PDA. Plants were arranged in the greenhouse (~20 to 28°C; 12:12 h light/dark) in a randomized complete block design with three blocks and three plants/treatment. Dark brown necrosis averaging 5.8 ± 0.2 mm in length developed on 100% of plants in both isolate treatments within 3 DPI and by 6 DPI had expanded to 42.1 ± 4.8 mm, sometimes spreading into the crown, killing the plant. Limited necrosis (to 2 mm) developed in negative controls. The pathogen was recovered from surface disinfested tissue for both isolates in fruit and petiole trials. *Sclerotinia* crown rot susceptibility was further compared among four regionally common short-day cultivars: Flavorfest, Chandler, Allstar, and Honeoye, as above. Stem lesions were 2 to 3 times longer on cv. Flavorfest (41.78 ± 6.73 mm) compared with all other cultivars (13.68 ± 1.56 mm) ($P < 0.0001$, Tukey's test). This is the first report of both *Sclerotinia* fruit and crown rot on strawberries in the mid-Atlantic region. Results indicate that cv. Flavorfest, a recently developed, popular cultivar, may be more susceptible to *Sclerotinia* and detection may be associated with increased cv. Flavorfest use. Given high cultivar susceptibility, this disease may be more economically impactful than indicated in previous studies (Farr and Rossman 2019; Maas 1998).

References:

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